

## ABSTRACT OF THE DISCLOSURE

A power system with a fuel cell array is integrated with power, conversion and control circuitry forming an assembly on a single chip. The power system may include mounted discrete components or flip chips. The power transistors may be built with contacts on both top and bottom of the chip, where the large area on the bottom allows for high power dissipation and current densities. Electrical connections are made between the components by etched runs or integrated layers, as is typically found in integrated circuits. The control functions include controlling the gas flowing in the fuel cell channels in response to the power supplied. Temperature and pressure may be measured and used to optimize the power system operation.